# The Political Economy of Green Energy

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# Outline

- Climate Change
- Cost-Benefit Considerations
- Instrument Choice and Policy Design
- Carbon Pricing and Feed-in-Tariff
- Policy Design Considerations
- Conclusion

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# The Case for Green Energy

- Climate Change
- Pollution
- Energy Security
- Technological advancements and increasing awareness making green energy economically viable and politically acceptable

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# A Simple Cost-Benefit for Policy Objectives Very Low to Very High (1 – 5)

| Source | Environmental Impact | Capital Investment | Marginal Cost | Political Un-Acceptance | Technological Hurdles | Total |
|---|---|---|---|---|---|---|
| Coal | 5 | 3 | 3 | 3 | 1 | 3 |
| Oil | 4 | 3 | 4 | 3 | 1 | 3 |
| Gas | 3 | 3 | 3 | 2 | 2 | 2.6 |
| Hydro | 2 | 5 | 1 | 4 | 2 | 2.8 |
| Nuclear | 2 | 5 | 1 | 5 | 3 | 3.2 |
| Biomass /Biofuel | 2 | 2 | 2 | 2 | 1 | 1.8 |
| Wind | 1 | 4 | 1 | 1 | 4 | 2.2 |
| Solar | 1 | 4 | 1 | 1 | 4 | 2.2 |
| Wave/ Tidal | 1 | 5 | 1 | 1 | 4 | 2.4 |

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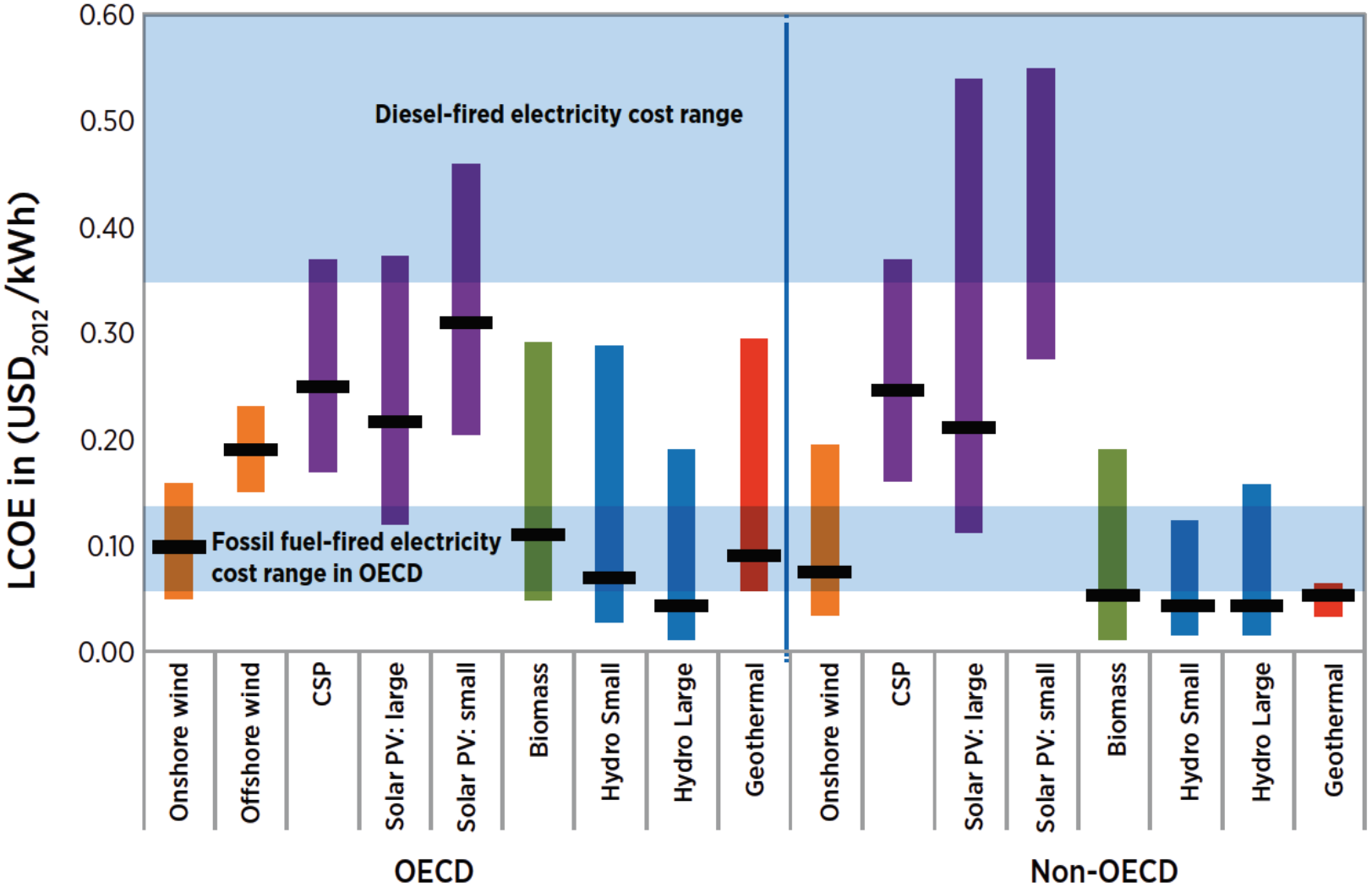
# Levelized Cost of Electricity




Source: IRENA

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# Instrument Choice

- Markets alone will not respond or will be too slow to meet the challenges of climate change and energy security, markets need "nudge"
- Treasury – feed in tariff
- Regulation – carbon pricing
- Information – raise political unacceptability of Coal and Oil and acceptability of Nuclear & Hydro
- All three instruments work best in tandem and when well designed in order to internalize externalities and share rents/costs in equitable way

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# Policy Design Issues

- Policy makers across the world generally give in to the pressures from concentrated interest groups and spread the costs of policy design indirectly to diffused population, resulting in:
  - Quantity (cap-and-trade) regulation narrowly targeted over direct pricing (carbon tax) broadly
  - Feed-in-tariff payed from large tax-base
  - Cancelling nuclear and hydro options
  - Redistribution of rents

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# Policy Design Issues

- Since carbon pricing is a highly contentious issue, lack of certainty and ideological dispositions play a critical role such as:
  - Exact expected environmental impact
  - Unequal distribution of the damages and benefits
  - Contributions to carbon stock vs. marginal carbon cost
  - Intergenerational discount rate
  - Liberty and Equity
- Nevertheless, estimates suggest a USD 15-90 per ton $CO_2$, based on various considerations
- No carbon tax or trading scheme so far has reached even close enough to these estimates

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# Carbon Pricing Issues

- Cap-and-trade schemes are largely ineffective, due to:
  - Caps are overly conservative in their calculations
  - Over allocation of permits
  - No price-floor
  - Regulatory capture / corruption
- Carbon tax relatively effective but controversial due to perceptions of fairness and distributional impact
- Fossil fuel lobbies exert enormous pressure in market dominated countries or state itself is involved in fossil production and consumption
- End-use energy price impact remains a politically sensitive issue, particularly in absence of targeted welfare programs (tax rebates, lump-sum payments, utility vouchers, etc) and effective demand management/energy efficiency policies

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# Feed-in-Tariff Issues

- FiT policies have not materialized their full potential, due to:
  - Prices offered often do not take market risk into account
  - Grid operators not cooperative despite mandatory regulation
  - Conventional generators lobby against
  - Government owned utilities often lack expertise
  - Largely focused on large investors
- FiT policies unlikely to be more effective in the absence of infrastructure overhaul and an efficient regulatory environment
- Cost of infrastructure overhaul need subsidizing
- There remain technological hurdles in commercializing renewables for which not all countries need to jump in the "innovation" and "R & D" bandwagon

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# Policy Design Considerations

- Subsidies to the renewable sector in absence of carbon pricing is only effective minimally
- Carbon pricing alone is not sufficient either
- More importantly, revenues from carbon pricing shall be directly linked to the subsidies, in order to avoid distributional distortions
- Carbon tax far more effective than cap-and-trade
- End-user needs targeted welfare programs
- Both the above policies work best along with policies that reduce energy demand and increase efficiency
- Policy makers shall work on increasing political acceptability of Nuclear and Hydro and unacceptability of Coal & Oil

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# Thank you

**Q & A**